



Quick Reference Guide

Tips for Proper Maintenance and Storage of your GEM

2007-Current GEM e2, GEM e4, GEM e6®, GEM eS, GEM eL, GEM eL XD



BASIC VEHICLE OPERATION INSTRUCTIONS:

- Disconnect the Charging Cord from the vehicle before operating
- Master Disconnect Switch must be in the ON position
- Turn key clockwise to the ON position
- The display will indicate an illuminated red colored Brake Light symbol in the upper left corner, fully release the Parking Brake Lever
- Select driving mode (R, DL, or DH)
- Press Accelerator Pedal and go



Master Disconnect Switch

SERVICE CODES

(The Service Code is displayed in the same location as the mph/kph and is accompanied by the Service Wrench icon.)

- [06] Indicates that the Accelerator Pedal is pressed and no direction has been selected. Release Accelerator Pedal and insure Direction Switch is locked into position.
- [11] Indicates Accelerator Pedal is pressed before key is turned to the ON position. Turn key to OFF position. Release Accelerator Pedal. Turn key to ON position.
- [15] Indicates a low state of charge for the batteries. Fully charge batteries before operating.
- [16] Indicates that there is a high state of charge for the batteries. Turn headlights on for several minutes, then turn key switch to the OFF position and then to the ON position.



* If you see other Service Indication Codes please contact your dealer for service. A complete list of error codes is available in the Service Manual, a purchasable item from your local authorized GEM dealer.

HOW TO DETERMINE IF CHARGE IS AT 100%

After charging is 100% complete, the Charger Connected icon will be the only thing lit and the bar graph will not be illuminated. A green light on the charger itself will also illuminate when the car is 100% charged. To know if the charging process is complete, all ten bars on the State of Charge Indicator should be illuminated when the car is turned on. If neither the Charger Connected icon nor the State of Charge Indicators are illuminated, the charger may not be charging. If this occurs, make sure the Main Disconnect Switch is in the ON position. More information on the charger and charging of the batteries is discussed on pages 76-81 of the Owner's Manual.



Plugged In Charging



Charge Complete

PERCENT OF CHARGE DISPLAY

The new charging display on the 2010 GEM car model years, makes it easy for the GEM user to tell how much battery life is available. When the vehicle is plugged in and charging, the percent of charge is displayed.



30% Charged



74% Charged

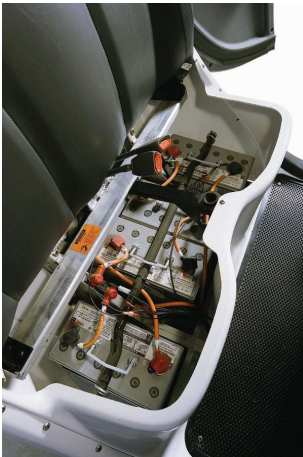


99% Charged

Please refer to your Owner's Manual for more detailed information regarding your vehicle.

BATTERY CHARGING

The GEM has a battery control and recharge system specially designed for electric vehicle usage. Depending on the model and options of your GEM, it may be equipped with flooded-wet cell or valve regulated gel type lead acid batteries. There are also two possible battery placement configurations. The standard configuration consists of six 12-volt batteries with two of the batteries located under the battery access cover on the bed of the GEM eS, GEM eL, GEM eL XD, and the GEM e6 models, or under the maintenance plate on the rear spat of the GEM e2, GEM e4, and GEM e6 models, with the other four batteries located under the seat on all models. The optional configuration, available on the GEM e6, and the GEM eL XD models, consist of nine 8-volt batteries. On the GEM eL XD model, six of these batteries are located under the bench seat, with the remaining three located under the access panel located on the bed. On the GEM e6 model, three of the batteries are located under the middle seat pedestal, with access through the panel located on the front of that pedestal. More batteries are located under the rear bench seat, with the final three batteries located under the access panel on either the rear bed or rear spat. The charging system is designed to maximize the battery pack life while recharging the pack in the shortest time with available household current (ground fault protected 110-volt, 15 amp, A/C outlet). The following guidelines will insure that you receive the maximum battery life and performance out of your GEM. Because of high power draw at low states of battery charge, the AC outlet should be dedicated only to recharging the GEM.



Batteries Under Bench Seat

RECHARGE VEHICLE AFTER EACH USE.

Your GEM is equipped with a battery charger that includes a feature that will monitor the state of charge of the batteries, and will initiate a charge cycle whenever the batteries fall to a pre-determined charge level. To enable this feature, leave the Master Disconnect Switch in the ON position (see figure A on previous page) and keep your car plugged into a standard household 15-amp 110/120-volt A/C outlet. Charger also works on a 20-amp 220/240-volt A/C outlet.

NOTE: THE BATTERIES USED IN YOUR GEM WILL PERFORM BETTER WHEN KEPT FULLY CHARGED. THEREFORE, WHENEVER POSSIBLE, RECHARGE THE BATTERIES—NO MATTER WHAT STATE OF CHARGE IS INDICATED.

1. The Master Disconnect Switch must be in the ON position for the charger to operate and charge the batteries. The Master Disconnect Switch is located in the Fuse Access Panel of the white lower dash.

2. The Battery Charger Receptacle is located on the hood. It accepts a standard, 3-wire, grounded extension cord. The extension cord should not exceed the following: 12-gauge wire 50 feet in length or 14-gauge wire 25 feet in length.

3. Insert the proper extension cord into the Battery Charger Receptacle.

4. Plug the extension cord into a 110-volt A/C, 15-amp breaker outlet. A Ground Fault Interrupt protected circuit (GFI) is recommended. **TO ENSURE PROPER CHARGING, NO OTHER CARS, APPLIANCES, DOOR OPENERS, ETC. CAN BE PLUGGED INTO THE SAME CIRCUIT. DO NOT USE A GFCI CORD WITH A GFCI OUTLET.**

5. A full recharge cycle can take from 8 to 14 hours (if the state of charge indicator is indicating only one red bar), depending on battery option-12 volt or 8 volt.



BATTERY TIPS & STORAGE RECOMMENDATIONS

1. Battery posts must be clean and tight.
2. If corroded, clean posts with a solution of one cup baking soda and one gallon water.
3. When storing or not using your GEM for an extended period of time (two weeks or longer) it is recommended that you first check the water level of the batteries, unless equipped with maintenance free gel batteries, and leave the vehicle plugged in with the Master Disconnect Switch in the ON position. The charger will restart every 7 days for liquid batteries and every 14 days for gel batteries, for up to 24 times as long as the charger does not red fault code.
4. The Master Disconnect switch must be in the ON position for the charger to operate and charge the batteries.
5. If the batteries appear to be frozen, do not charge them. Contact your local authorized GEM dealer or Global Electric Motorcars Customer Service at 1.866.764.0616 for service.

FLOODED BATTERIES

1. The water level in these batteries needs to be maintained at no higher than the bottom neck opening (1/2 inch above the plates) and should be checked at least monthly.
2. If the water level is below the plates, add just enough distilled water to cover the plates, then charge and re-check the water levels.
3. If the water level is below the neck opening, but above the top of the plates, first charge the vehicle, then re-check the levels and add distilled water to just below the neck opening. Overfilling can cause the batteries to boil and spill acid.
4. Check all battery connections monthly to ensure that they are tight and free of corrosion. If corrosion starts to appear, wash the tops and terminals of batteries with a solution of one cup baking soda and one gallon water. Let terminals dry and then spray them with anti-corrosion spray.

WATERING DIAGRAM

Flooded batteries need water. But more importantly, watering must be done at the right time and in the right amount or else the battery's performance and longevity suffers.

General watering instructions:

- Add water, never acid, to cells (distilled water recommended)
- Do not overwater
- For fully charged standard deep cycle batteries, add water to the level of 1/8 below bottom of vent wall (see diagram A on next page).
- If the batteries are discharged, only add water if the plates are exposed. Add just enough water to cover the plates, then charge the batteries. Once fully charged, add water to the proper level indicated above.
- After watering, secure vent caps back on batteries.

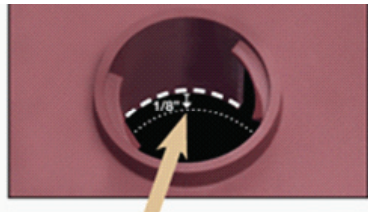


Diagram A

Add water to 1/8" below bottom of the vent well.

GEL BATTERIES

There is little maintenance needed for the GEL batteries only to keep the batteries charged and the terminals clean and tight. It is recommended that you check the battery terminals at least once a month for corrosion. While checking the terminals, make sure that there is a tight connection between the battery cable and the battery terminal. If corrosion starts to appear, wash the tops and the terminals of batteries with a solution of baking soda and water using the 1 cup/gallon ratio. Let terminals dry and then spray them with anti-corrosion spray. If you regularly maintain the batteries, your GEM will run more efficiently.

GEM ON-BOARD CHARGER

Your GEM contains an on-board 12-amp, 72-volt charger. There is a safety feature built into the charger that will not allow it to engage if the batteries are overly discharged. This safety feature is activated when the charger detects that the combined voltage of all six batteries or nine batteries, depending on configuration, is 68-volts or less. If the total voltage is below 68-volts and the on-board charger will not activate, it then becomes necessary to employ an alternate charging method.

ALTERNATE CHARGING METHOD

(Requires a 12-volt battery charger, or 24-volt battery charger for an 8-volt battery configuration). The Alternate Charging Method is designed to charge each battery in the vehicle separately using a 12-volt battery charger. During the Alternative Charging Method it is not necessary to remove or unhook battery post connections. Turn the Master Disconnect Switch to OFF position. Set 12-volt charger, or 24-volt charger (same as you would use to charge any 12-volt battery) to medium amp settings (10 to 30 amps). Charge each battery 10-20 minutes. Move quickly from battery to battery, as this is only a residual charge and it will dissipate in a short period of time.

After charging the last battery, remove the off-board charger leads, turn on the Master Disconnect Switch, and plug the vehicle in. If the on-board charger does not recognize the residual charge and activate, it may be necessary to repeat the Alternate Charging Method.

TIRE INFLATION

Maintaining proper tire inflation pressure is essential for safe operation of your vehicle. Improperly inflated tires can also contribute to poor battery range and vehicle handling. Tire inflation pressures should be checked monthly and maintained at 30 psi for 10" tires, 32 psi for 12" tires, and 36 psi for 13" and 14" tires.



CLEANING INSTRUCTIONS

Windshield or Sunroof

We recommend using GEM Windshield Cleaner and Protectant to clean the windshield, sunroof and side windows. Normal dust and dirt can also be removed using a liquid household glass cleaner. Do not use abrasive cleaners on the windshield and sunroof, as they will cause scratches.



NOTE: Be very careful when cleaning the acrylic windows as they can be scratched or damaged. Do not use a cleaner with an abrasive, a combination cleaner and wax or any solvent that contains ethyl or methyl alcohol. Also, do not use products containing ammonia, soaps or abrasives. Never use gasoline or cleaning solvent. These products can scratch and/or destroy the surface of the windows. To remove oil, grease or road tar, use isopropyl alcohol, then wash the windows with water. Dry gently with a soft cloth or chamois.

Seats and Interior

We recommend using GEM Foaming All-Surface Cleaner to clean your seats and interior surfaces. You can use warm water and rub with a clean, damp cloth to remove dirt. Substances such as tar and asphalt will stain if not removed quickly. Use a clean cloth and solvent-type vinyl cleaner. Then wash the area thoroughly with a damp cloth and mild liquid detergent. Finish by rinsing with cool water.



NOTE: Do not spray the interior of the vehicle with water. Water contact to the windshield, dash panel or instrument panel could damage the electrical system.

Exterior

The best way to preserve your vehicle's finish is to wash the vehicle regularly. Use mild liquid detergents only (no strong soaps or chemical detergents) and rinse promptly. Dry the finish with a soft, clean chamois or towel to avoid surface scratches and water spotting. To remove haze, bring back the original shine and protect the exterior surfaces of your vehicle, we recommend using GEM Fiberglass, Plastic and Rubber Restorer.



NOTE: To avoid spotting, do not wash the vehicle in direct sunlight.

Please refer to your Owner's Manual for more detailed information regarding your vehicle.

ACCESSORIES AND FACTORY APPROVED PARTS

To view the wide selection of Global Electric Motorcars factory approved parts, accessories, and upgrades available for your GEM vehicle go to www.nevservice.biz or you can call 1.866.764.0616 to request a catalog be mailed to you at no charge.



MAX BOX by GEM



Easy Fill Battery Filler



GFCI Charge Cord



Sun-Sliding Visor



Bumpers



Fast Chargers



Panoramic Mirror



Hard Doors, Stake-Back Kits

GEM Notes:



1301 39th St NW Suite #2 ■ Fargo, ND 58102

www.gemcar.com

www.newservice.biz

866.764.0616